COSC 342 Report

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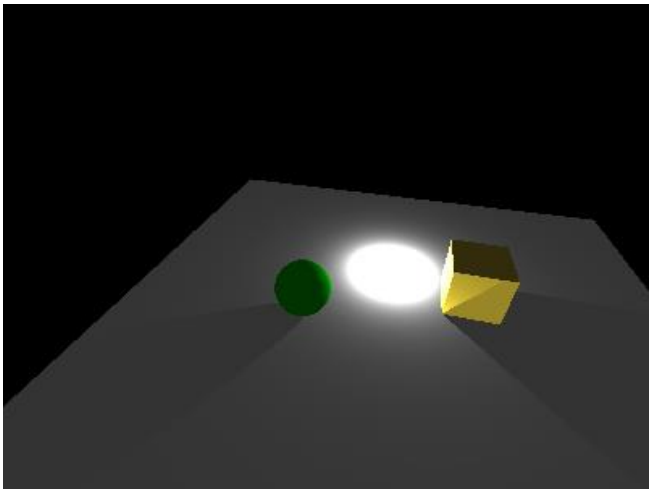
Grace Park

This assignment's task was to create some parts of the ray tracing components. Ray tracing is based on the idea to generate efficient rendering process by tracking the light source from the hitpoint. Throughout the assignment I was only able to create some parts of it like cube, plane, mirror, shade and few lights. The figure under is what I created according to some ray tracer component I created.

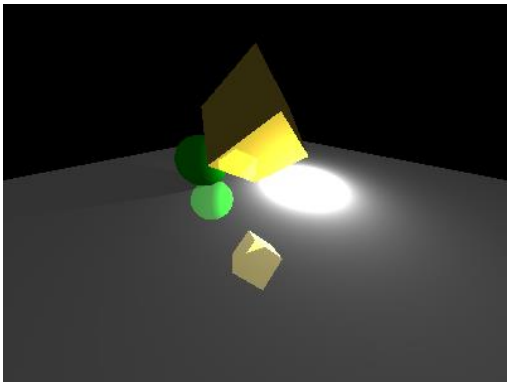


This figure is a scene with a cube that is given a material called "gold" next to the point light. There are two objects in the scene as noticed, and it is definitly possible to see shadows generated behind the light.To start with the scene, Plane was generated.

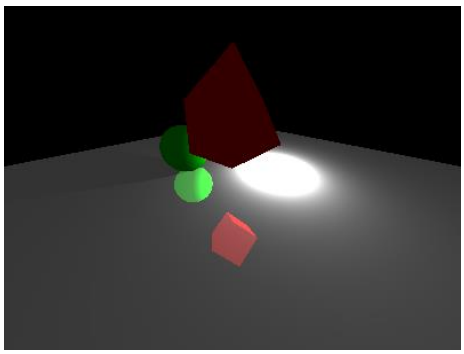
The first plane I got was a plane that was faced directly to the monitor which did not fit the scene above. The most difficult part of creating the scene was deciding the angle of the plane. I tried multiple ways to figure out in what direction it needs to rotate to create a plane that more looks like a ground. I figured as I adjusted X axis of the plane, it starts to rotate backwards where after X reached 90 degrees, it actually looked like a ground.

To create a cube I added six planes as a set. This was eaier way to create a cube especially when I wanted to adjust the location of the cube in the scene. Rather then creating six planes every single time I move the cube, by moving the "cube" component it was easier to move around.

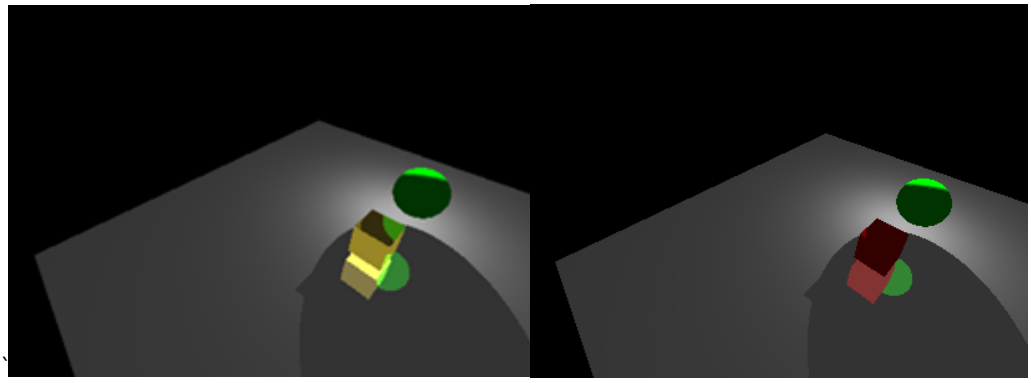
In this cube as well, it was really hard to figure out in which angle I had to adjust to make it look like it is on the plane. But throguh lot of testing I figured in position X 2 Y 0 Z 3, it sits where it is sitting now above. Sphere was easiest to adjust since it does not particularly have angles. I just adjusted Z axis so that it does not run away outside the scene.



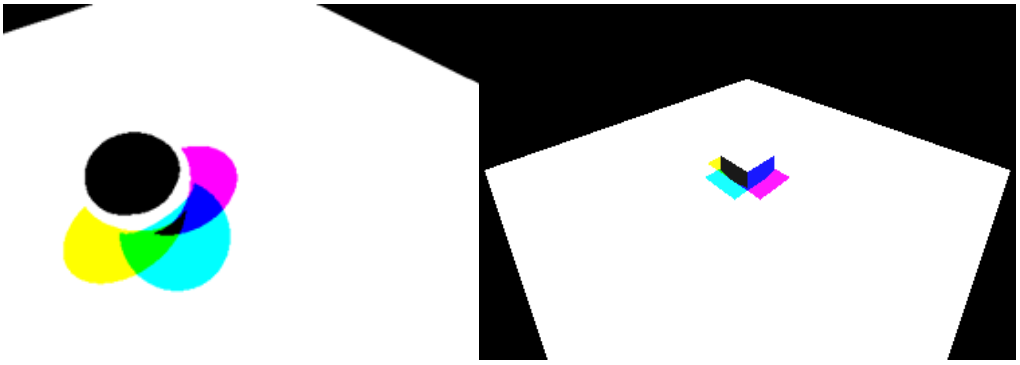
The figure above shows mirror effect of the cubes and sphere on the ground. This also used the same cube and same sphere from above figure. The material "gold" has some mirror effect with colour of yellow, as it is shown the cube itself is reflecting some light.



The figure above shows the cube with deleted material. Without the material of the object which had mirror effect, now does not reflect anything even though it is still being reflected on the ground. Also when the material had the mirror effect, the scene seemed brighter. This was because the object reflects the light and sends it around the scene.



I personally tried to hoover a sphere on the top of the reflective object. As shown, since the object is reflective, it reflects the sphere above the cube. Also since the sphere is close to the light source, the shadow gets bigger and clearer then it was further away from it.



The biggest flaw in the program is shown above. I tried to create the scene with spotlight but failed to do so. As it is shown the light adds as what RGB would add together rather than lights adding together. This is proven by looking at the point where yellow, blue, and magenta light hitting the same spot and shows black when with actual light equation it should be white.